



PATENT

Attorney Docket No.: 021433-000120US  
Client Ref. No.: 1151.1106101

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of:

ROBERT S. KIEVEL et al.

Application No.: 09/963,777

Filed: September 26, 2001

For: ELECTRODE DESIGNS AND  
METHODS OF USE FOR  
CARDIOVASCULAR REFLEX  
CONTROL DEVICES

Customer No.: 20350

Confirmation No. 1758

Examiner: Orpeza, Frances P.

Technology Center/Art Unit: 3762

**DECLARATION OF  
IRVING H. ZUCKER Ph.D.**

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

I, Irving H. Zucker, Ph.D., declare as follows:

1. A copy of my *curriculum vitae* is attached hereto.
2. I have read and understood the above-referenced U.S. patent application.
3. I have read and understood the Office Action mailed on September 13, 2005, during prosecution of the above-referenced patent application.
4. I have read and understood U.S. Patent No. 5,540,734 (the "'734 Patent"), which is relied on in rejecting certain claims in the Office Action dated September 13, 2005.
5. The Examiner is relying on the teachings of the '734 Patent as showing that an electrode may be placed around the "carotid sinus." The Examiner specifically refers to the carotid sinus as being element "15" in the '734 Patent.

6. Element 15 in the '734 Patent is shown in Fig. 2 and described in the Specification in the paragraph beginning at Col. 4, line 45, which reads as follows:

*"FIG. 2 illustrates possible sites for attachment of electrodes to the glossopharyngeal nerve. FIG. 2 shows schematically a generator 1, which may be surgically implanted at some point in the patient's body in a known manner. Preferably, the generator 1 is implanted in or near the chest. Extending from the generator 1 are one or more generator leads 2 which terminate at one or more electrodes, preferably helical electrodes, placed on the glossopharyngeal nerve 9. Recommended sites for electrode placement include site 10, which is where the glossopharyngeal nerve enters the brain through the jugular foramen 11. Alternatively or additionally, an electrode may be placed on the glossopharyngeal nerve at a point distal from the jugular foramen, as indicated, for example, by electrode placement site 12. One point distal from the jugular foramen is along the carotid sinus 13, which connects to the bifurcation of the carotid artery 14. It may be convenient for a surgeon to locate an electrode at placement site 15 on the carotid sinus, or an electrode placement site 10 just outside the jugular foramen, by first locating the bifurcation in the carotid artery 14, and tracing the glossopharyngeal nerve from that point."*

This passage states that "the carotid sinus 13 . . . connects to the bifurcation of the carotid artery 14" and that an electrode may be located "at placement site 15 on the carotid sinus." Placement site 15 is clearly a nerve.

7. The description of Fig. 2 contained in this paragraph of the '734 Patent is anatomically incorrect. With reference to **EXHIBIT A**, attached hereto, it can be seen that the carotid sinus nerve extends between a bifurcation in the common carotid artery and the glossopharyngeal nerve. The carotid sinus is a portion of the vascular structure which is adjacent to the bifurcation in the carotid artery. The patent text can thus be seen to be in error when referring to the carotid sinus 13. The text should have referred to the carotid sinus nerve 13.

8. A subsequent paragraph in the '734 Patent beginning at Col. 7, line 59 makes it more clear that the earlier reference to the "carotid sinus 13" was in error. That paragraph is reproduced as follows:

*"After selecting the nerve which will receive the implant, one must determine the site at which the implant will be placed. As shown in FIG. 1, the trigeminal nerve has three nerve roots. An electrode may be placed at one or more of these roots. Alternatively, the electrode may be placed at the Gasserian Ganglion, which is a terminus for the three roots. Signals will travel from the Gasserian Ganglion to the Trigeminal Nucleus, and then generate impulses in pathways projecting to other areas of the brain. As shown in FIG. 2, the glossopharyngeal nerve may be accessed just prior to its entry into the brain, which occurs at the jugular foramen. Alternatively, one of the branches of the glossopharyngeal nerve may receive the electrode, including the carotid sinus nerve. The surgeon will often find it convenient to first locate the bifurcation of the carotid artery, and at that point identify the carotid sinus nerve which may be traced to the jugular foramen."*

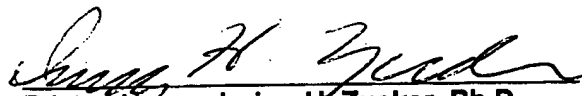
9. This passage clarifies that it is the carotid sinus nerve which extends between the glossopharyngeal nerve and the bifurcation of the common carotid artery. This paragraph is thus anatomically correct. As it is inconsistent with the earlier paragraph, it is clear evidence that reference to the carotid sinus in the earlier paragraph was in error.

10. No place in the '734 patent is it stated that stimulation would be carried out by "field stimulation" of the carotid sinus which is clearly the case in patent publication US 2003/0060857 A1.

11. I further declare that all statements made herein of my knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the APPLICATION or any patent issuing thereon.

Date:

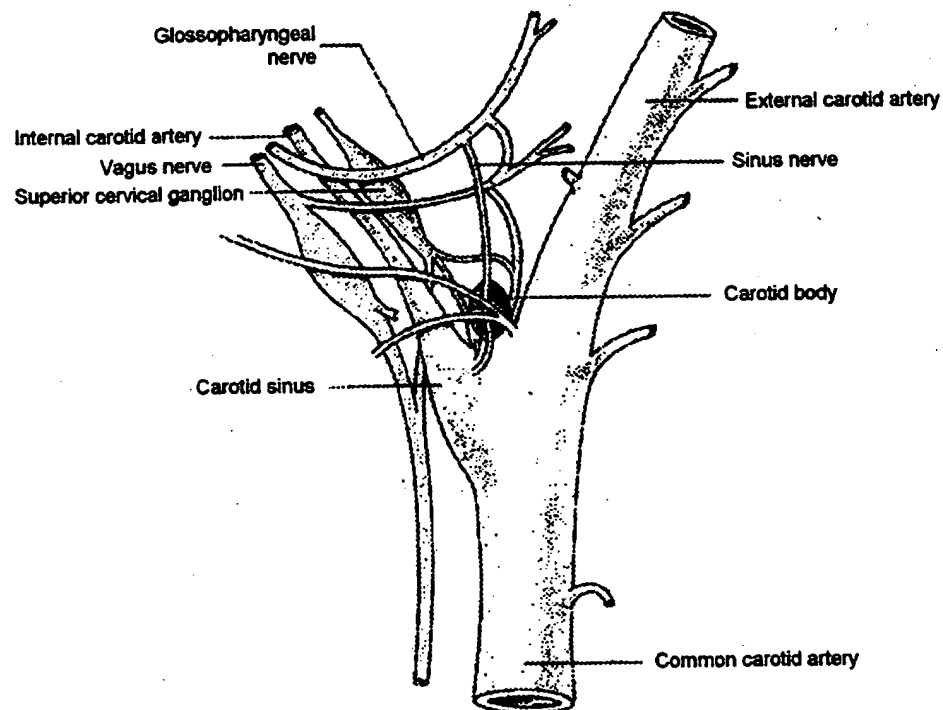
11/19/05

  
Printed Name: Irving H. Zucker, Ph.D.

Attachments: *Drawing of carotid sinus*  
(Taken from Anatomy and Physiology,  
Second Ed., Gary A. Thibodeau and  
Kevin T. Patton, ISBN-8016-5005-4)

*curriculum vitae of Irving H. Zucker, Ph.D.*

EXHIBIT A



**Fig. 8-8.** Diagrammatic representation of the carotid sinus and carotid body and their innervation in the dog.  
(Redrawn from Adams, W.E.: The comparative morphology of the carotid body and carotid sinus, Springfield, Ill., 1948, Charles C. Thomas, Publisher.)

# CURRICULUM VITAE

**NAME:** Irving H. Zucker

**CAMPUS ADDRESS:**

Department of Cellular and Integrative Physiology  
University of Nebraska Medical Center

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**DATE AND PLACE OF BIRTH:** July 13, 1942 - New York, New York, U.S.A.

**EDUCATION:**

<u>Degree</u>	<u>Year</u>	<u>Institution</u>	<u>Major</u>
B.S.	1965	The City College of New York New York City, New York	Biology
M.S.	1967	University of Missouri at Kansas City Kansas City, Missouri	Biology
Ph.D.	1972	New York Medical College New York City, New York	Physiology

**PRE AND POSTDOCTORAL TRAINING:**

1967 - 1972	NSF Predoctoral Trainee, Department of Physiology, New York Medical College
1972 - 1973	NIH Postdoctoral Fellow, Department of Physiology and Biophysics, University of Nebraska Medical Center

**AREA OF SPECIALIZATION:**

Cardiovascular reflexes, heart failure, hypertension, renal function, neural control of blood volume and blood pressure, nitric oxide, angiotensin II.

**ACADEMIC APPOINTMENTS:**

Oct, 2004-	Professor, Internal Medicine, Division of Cardiology-Courtesy Appointment
1998-	Theodore F. Hubbard, M.D. Endowed Chair of Cardiovascular Research

## **ACADEMIC APPOINTMENTS**

- 1997- Director, UNMC Cardiovascular Research Center
- 1989- Chairman, Department of Physiology and Biophysics, University of Nebraska  
College of Medicine, Omaha, Nebraska
- 1983- Professor, Department of Physiology and Biophysics, University of Nebraska  
Medical Center, Omaha, Nebraska
- 1980-1983 Associate Professor with tenure, Department of Physiology and Biophysics,  
University of Nebraska Medical Center, Omaha, Nebraska
- 1976-1983 Associate Professor, Department of Physiology and Biophysics, University of  
Nebraska Medical Center, Omaha, Nebraska
- 1973-1976 Assistant Professor, Department of Physiology and Biophysics, University of  
Nebraska Medical Center, Omaha, Nebraska

## **OTHER PROFESSIONAL EXPERIENCE:**

- 1965-1967 Graduate Teaching Assistant, Department of Biology, University of Missouri at  
Kansas City

**HONORS:**

Established Investigator of the American Heart Association, July 1977-July 1982

NIH Research Career Development Award (not accepted) - July 1977

Great Plains Regional Review Group, American Heart Association, 1978-July 1982

Chairman, Research Committee, American Heart Association, Nebraska Affiliate, 1979-1981

Member, Board of Directors, American Heart Association, Nebraska Affiliate, 1979-1981

Research Committee, Nebraska Heart Association, 1979-1983

MASUA Honor Lecturer, 1980-1981

Sigma Xi, 1982-

University of Nebraska Foundation Merit Award - Bookmeyer Fund, 1983

Research Committee, Nebraska Heart Association, 1984

Animal Care and Experimentation Committee of the American Physiology Society, July, 1985-July, 1988

Alternate to Delegate Assembly, Council on Circulation, American Heart Association, 1986

American Heart Association Delegate: Research and Medical Programs Reference Commission, 1987

Visiting Scientist, Hebei Medical College, Shijiazhuang, People's Republic of China, July 6-11, 1987

Organizer and Participant, Joseph P. Gilmore Symposium. September 29, 1988.

Visiting Scientist of the National Science Council of Taiwan, R.O.C. May 5-12, 1991.

Scientific Advisory Board, International Society of Heart Failure, Inc. 1992-

MERIT Award, National Heart, Lung and Blood Institutes, 1992-2002

Outstanding Research and Creative Achievement Award- University of Nebraska, 1993

Member, International Scientific Advisory Board of the International Academy of Cardiology, Inc June 1, 1997-

Councilor, Society for Experimental Biology and Medicine, July 1, 1998-June 30, 2002

President, Nebraska Physiological Society 1998-2000

Publications Committee, Heart Failure Society of America, 1998-2000n's Award for Outstanding Contributions to the College of Medicine, 1999

Marcus Award Selection Committee, Council on Basic Cardiovascular Sciences, American Heart Association, 2000-2002

Member at Large of the Executive Committee of the Council on Basic Cardiovascular Sciences. American Heart Association, July 1, 2000-June 30, 2002.

Councilor, American Chairs of Departments of Physiology, 2001

Fellow of the American Heart Association (FAHA), 2001-

President -Elect, Association of Chairs of Departments of Physiology (ACDP), 2002

President, Association of Chairs of Departments of Physiology (ACDP), 2003

Member, Communication Committee, Council on Basic Cardiovascular Science, American Heart Association July 1, 2002-June 30, 2006

Member, Public Affairs Committee, APS, 2000-2004

Chairman, Public Affairs Committee, APS, 2004

Member, National Research Committee, American Heart Association, July 1, 2003-June 30, 2004

Member, Research Committee, American Heart Association, Heartland Affiliate, Nov 1, 2003-

Councillor, American Physiological Society, April 2004-April 2007



## **REVIEWS AND STUDY SECTIONS:**

### **Journals**

The American Journal of Physiology

The American Journal of Cardiology

Physiological Genomics

The American Journal of Hypertension

Annals of Internal Medicine

Basic Research in Cardiology

Brain Research

Circulation

Circulation Research

Cardiovascular Research

Clinical Science

Comparative Biochemistry and Physiology

Drugs Under Experimental and Clinical Research

The Journal of Clinical Investigation

Hypertension

Life Sciences

Metabolism: Clinical and Experimental

The Journal of Cardiovascular Pharmacology

Journal of Pharmacology and Experimental Therapeutics

PNAS

Peptides

The Journal of Cardiac Failure

Little, Brown & Company

Journal of Experimental Physiology

The Journal of Physiology (London)

Abstracts for American Heart Association published in *Circulation*, 1982-1990, 1994-95, 1998, 2004

## **Organizations**

National Science Foundation

National Aeronautics and Space Administration

National Institutes of Health (Ad Hoc Study Section; Experimental Cardiovascular Sciences and Cardiovascular and Renal, January, 1985)

National Institutes of Health site visit team for program project, Stanford University, October 1984

National Institutes of Health site visit team for program project, Tufts University, October, 1984

Chairman, Special Review Group, NIH, November 9, 1987

Special Review Group, NIH, December 9, 1987

Special Review Group, NIH, July 21, 1992

National Institutes of Health site visit team for program project, University of Michigan, October 5, 1988

National Institutes of Health site visit team for program project, Case Western Reserve University, February, 1990

National Institutes of Health site visit team for program project, University of Texas Southwestern Medical School, February 16-18, 1992

National Institutes of Health site visit team for program project, University of Iowa, School of Medicine, May 21-22, 1992.

National Institutes of Health site visit team for program project, University of Oklahoma School of Medicine, May 09-11, 1994

Great Plains Regional Review Group, American Heart Association, 1978-1982

American Heart Association-Cardiovascular Regulation Research Study Committee, 1990-1992

National Institutes of Health, Cardiovascular and Renal Study Section- Ad Hoc, February, 1990

National Institutes of Health, Experimental Cardiovascular Sciences Study Section-Ad Hoc, June 8-10, 1994

National Institutes of Health, Respiratory Functions Special Study Section, July, 1994

National Institutes of Health, Respiratory Functions Special Study Section, Chairman, November 28, 1994

National Institutes of Health, Special Emphasis Panel-PPG review, March 24-25, 1997

National Institutes of Health, PPG review, January 20-21, 1998

National Institutes of Health, Special Emphasis Panel- Heart Failure Research, New Approaches to Pathogenesis, June 14-16, 1998

National Institutes of Health, Special Study Section, November 22, 1999

Melvin Marcus Young Investigator Award for Integrative Physiology of the American Heart Association, 1991, 1999-2002

Scientific Panel, Texas Higher Education Coordinating Board- September, 1991 International Science Foundation

Program Committee, American Heart Association, Circulation Council, July 7-8, 1995, July 11-12, 1996, July 8-9, 1998.

Chairman, Academic Review Committee, Department of Physiology, University of Arizona College of Medicine, Tucson, AZ, March 27-28, 2000

Member, Pathophysiology 1. Study Section. American Heart Association 2000-2002.

Member, Cardiovascular and Renal Study Section (CVB), NHLBI, 10/02-10/03

Member, Clinical and Integrative Sciences Study Section (CV IRG), NHLBI, 2/04-

Member, Heart Failure SCCORE study section, NHLBI, 2/04

### **EDITORIAL BOARDS:**

American Journal of Physiology: Regulatory, Integrative and Comparative Physiology, 1986-present

American Journal of Physiology: Heart and Circulatory Physiology, 1998-present

Basic Research in Cardiology- 1993-present

Circulation Research - 1992-present

Drugs Under Experimental and Clinical Research - 1984- present

Heart Failure Reviews-2000-present

Hypertension-2003-

The Journal of Biomedical Science - 1992-present

The Journal of Heart Failure-1994-96, 2000

Journal of Cardiac Failure-2000-present

Current Cardiology Reviews-2004-

Current Hypertension Reviews-2004-

**GRANTS FUNDED**

1. American Heart Association. Role of Atrial Receptors in Congestive Heart Failure. Principal Investigator. \$16,500 per year 07/75 - 06/78
2. Nebraska Heart Association. Neural Mechanisms in Congestive Heart Failure. Principal Investigator. \$8,988 per year 07/01/74 - 06/30/75
3. Nebraska Heart Association. Osmoreception by the Heart. Principal Investigator. \$4,500 per year 07/01/75 - 06/30/76
4. University of Nebraska Seed Grant. Study of Atrial Stretch Receptor Reflexes in the Primate. Principal Investigator. \$5,000 per year 07/01/74 - 06/30/75
5. National Institutes of Health. Neural Control of Blood Volume. Co-Inves-ti-gator. \$539,000, 09/01/75 - 08/31/80
6. University of Nebraska Medical Center. A Conscious Dog Model for the Study of Cardiovascular Reflexes. Principal Investigator. \$5,000 per year 07/01/77 - 06/30/78
7. National Institutes of Health. Reflex Control of the Circulation in Heart Failure. Principal Investigator. \$220,756 08/01/78 - 12/31/81
8. University of Nebraska Medical Center. Acute Resetting of the Arterial Baroreflex. \$6,962 07/01/79 - 06/30/80
9. The Nebraska Foundation. Purchase of an Autoanalyzer II. \$20,000 01/79 - 01/80
10. Nebraska Heart Association. The Role of Ventricular Receptors in Dynamic Exercise. \$9,775 07/01/80 - 12/01/81
11. American Heart Association. Ventricular Receptors and Heart Failure. \$91,520 07/01/81 - 12/30/84
12. University of Nebraska Medical Center. The Role of Prostaglandins in the Sympathetic Response to Epicardial Bradykinin in the Monkey. \$5,000 07/01/81 - 06/30/82
13. Nebraska Heart Association. Function of Carotid Sinus Baroreceptors in Heart Failure. \$12,000 07/01/81 - 06/30/82
14. National Institutes of Health. Reflex Control of the Circulation in Heart Failure. \$230,875 12/01/82 - 11/30/86

15. State of Nebraska Department of Health. Cardiovascular Effects of Nicotine in Coronary Ischemia. \$21,000 07/01/82 - 06/30/83; \$35,000, 07/01/83 - 06/30/84
16. University of Nebraska Medical Center. The Effects of Myocardial Contractility on the Reflex Effects of Left Ventricular Mechanoreceptor Stimulation in Conscious Dogs. \$8,860 07/01/83 - 06/30/84
17. Nebraska Heart Association. Inotropic State and Left Ventricular Receptor Reflexes. \$11,983 07/01/84 - 06/30/85
18. National Institutes of Health. Ventricular Receptor Control of the Circulation. \$349,655 12/01/84 - 06/30/88
19. Nebraska Heart Association. Beta Receptor Stimulation of Carotid Sinus Baroreceptor Discharge. \$16,000 07/01/86 - 06/30/87
20. National Institutes of Health. Cardiac and Arterial Baroreflexes in Heart Failure. \$647,562 07/01/87 - 06/30/92
21. Nebraska Heart Association. Cardiac Prostaglandins and Renal Sympathetic Nerve Activity. \$16,000 07/01/87 - 06/30/88
22. Nebraska Heart Association. Central Baroreflex Resetting in the Conscious Dog. \$16,000 07/01/88 - 06/30/89
23. Nebraska Heart Association. The Role of Endogenous Opioids on the Baroreflex in Heart Failure. \$19,992 07/01/90-06/30/91
24. University of Nebraska Medical Center. The role of aldosterone on arterial baroreflexes. \$7,500 07/01/90 - 06/30/92
25. National Institutes of Health. Cardiopulmonary Reflexes in Heart Failure. \$787,205. 07/01/92-06/30/97.
26. MERIT AWARD-National Heart, Lung and Blood Institute. 7-1, 1992- 6- 30,2002
27. Nebraska Heart Association. Coronary vascular effects of estrogen in conscious dogs. \$40,000 07/01/94-06/30/96.
28. Parke-Davis Co. Evaluation of an orally effective endothelin antagonist in heart failure. \$60,000, 2/1/95-1/31/96
29. UNMC Interactive Seed Grant. Project I. The Role of Nitric Oxide and Angiotensin II on the Neural Control of the Circulation in Heart Failure. \$10,913. 7/1/96-6/30/97.

30. University of Nebraska College of Medicine Indirect Cost Proposal for a Cardiovascular Research Center. \$100,000. May 28, 1997-June 30, 2000
31. American Heart Association, Nebraska Affiliate. Endothelin and Sympathetic Nerve Activity in Heart Failure. \$40,000. July 1, 1997-June 30, 1999.
32. Merck and Company. Evaluation of an ET-A and a combined ET-A,B antagonist on hemodynamic and sympathetic function in a rabbit model of chronic heart failure. \$67,000. 1997-98.
33. NIH, NHLBI. Cardiovascular Research Training Program. \$383,715. July 1, 1998-June 30, 2003
34. NIH, NHLBI. RO-1, HL62365-01. Exercise and Sympathetic Nerve Activity in Heart Failure. \$614,264. April 1, 1999-July 5, 1999 (rolled into PPG)
35. NIH, NHLBI Principle Investigator, Program Project (P01 HL62222-01). "Neuro-Circulatory Function in Chronic Heart Failure". (Score 168) \$3,869,451 07/05/99-06/30/04
36. NIH, NHLBI. Project Leader, Project I: "Control of Sympathetic Outflow in Heart Failure: Ang II and NO". \$954,440 07/05/99-06/30/04
37. NIH, NHLBI Principle Investigator, "Core A: Administrative Core" \$385,232 07/05/99-06/30/04
38. Protostar, Inc. "Development of a baropacing unit for heart failure" 2000- \$35,000
39. Proctor and Gamble Pharmaceuticals. "Matrix metalloprotease inhibitors in a rabbit model of chronic heart failure." 2001- \$211,000.
40. BioNebraska (Restoragen). "Hemodynamic effects of GLP-1 infusion in rabbits with chronic heart failure. 2001-2002, \$38,136
41. NIH, NHLBI Principle Investigator, "Sympathetic Control in Heart Failure: A Role for Statins". 2002-2006, \$1,000,000
42. CVRx, "The baroreflex in heart failure", 2000-2003, \$97,179
43. University of Nebraska Medical Center. Purchase of an Acuson Echocardiograph. \$100,000 2002.
44. NIH, NHLBI. Program Project Grant. "Neuro- Circulatory Function in Chronic Heart Failure" 7/1/04-6/30/09 Total Direct Costs \$7,289,513

45. NIH, NHLBI. Project Leader. Project 1: "Sympathetic Outflow in Heart Failure: Ang II, NO and ROS." 7/1/04-6/30/09, Total Direct Costs \$ 1,139,824
46. NIH, NHLBI. Principle Investigator, "Core A Administrative Core". 7/1/04-6/30/09, Total Direct Costs \$500,000
47. NIH, NHLBI. Cardiovascular Research Training Program. 4/1/05-3/31/10, Total Direct Costs. \$919,138 (Pending)
48. CVRx, Inc. Augmentation of Baroreflex Function. 3/1/05-2/28/07, Total Direct Costs \$54,000

### **Grant and Industrial Consultant**

1. National Institutes of Health. "Chronic Elevation of NE: Cardiac and Vascular Regulation". Dr. Thomas H. Hintze, Principal Investigator. \$308,144 07/01/87 to 06/30/90.
2. National Institutes of Health. "Endotracheal Suctioning: Open versus Closed Systems". Dr. Mara Baun, Principal Investigator. \$360,904 03/17/88 - 03/16/90.
3. Dr. Alan Scher, Professor. Department of Physiology and Biophysics, University of Washington School of Medicine. June, 1985.
4. Dr. Kenneth L. Goetz, Professor and Chief of Department of Experimental Medicine, St. Lukes Hospital, Kansas City, Missouri. 1983.
5. Dr. Michael Bristow, University of Colorado School of Medicine. Heart Failure SCOR - 1993.
6. Dr. John Hall, Professor and Chairman, Department of Physiology, University of Mississippi College of Medicine, Jackson, MS. Program Project. August 1997, December 2002
7. CVRx, Inc. 2000-
8. Proctor and Gamble, Inc. 2000-2002
9. Restoragen, Inc. 2001-2002
10. Merck and Co. 1998-2000
11. Parke-Davis, Inc. 1997-1998

**SEMINARS AND INVITED TALKS GIVEN OUTSIDE THE INSTITUTION:**

1. May 1973. "Central Regulation of Sodium Excretion" Loyola University, Department of Physiology.
2. November 1974. New York Medical College, Department of Physiology. "Characterization of Atrial Stretch Receptors".
3. November 1975. Creighton University, Department of Physiology and Pharmacology. "Some Aspects of Atrial Stretch Receptor Function."
4. October 1977. University of Miami, Department of Medicine. "The Role of Atrial Mechanoreceptors in Fluid Homeostasis."
5. October 1978. Brown University, Department of Physiology and Biophysics. "Alterations in Atrial Receptor Activity in Chronic Heart Failure."
6. February 1980. "Atrial Receptors in Heart Failure." American Heart Association Council on Circulation. Keystone, Colorado.
7. April 1980. Symposium on Neurogenic Control of the Circulation, Anaheim, California. "Modulation of Renal Function by Atrial Receptors in Heart Failure."
8. December 1980. University of Oklahoma College of Medicine.
  - a. (College-wide) "Modulation of Renal Function by Atrial Receptors in Heart Failure."
  - b. (Department of Physiology) "Reflexes from the Left Ventricle."
9. December 1980. Oklahoma State College of Veterinary Medicine. Department of Physiological Sciences. "Modulation of Renal Function by Atrial Receptors in Heart Failure."
10. May 1981. Iowa State College of Veterinary Medicine, Department of Physiology and Pharmacology. "Modulation of Renal Function by Atrial Receptors in Heart Failure."
11. May 1981. University of Kansas College of Medicine, Department of Physiology. "Modulation of Renal Function by Atrial Receptors in Heart Failure."
12. May 1981. University of Iowa. Department of Medicine. "Reflexes from the Left Ventricle."
13. June 1982. Harvard University, New England Regional Primate Center, Department of Medicine. "The Bezold-Jarisch Reflex in Conscious Dogs."
14. June 1982. New York Medical College, Department of Physiology. "The Bezold-Jarisch Reflex Revisited."



15. March 1984. University of Texas Health Science Center, San Antonio, Department of Physiology. "Reflex Control of the Circulation in Pathological States."
16. June 18, 1984. New York Medical College, Department of Physiology. "Reflex Control of the Circulation in Heart Failure."
17. March 6, 1985. Michigan State University, Department of Physiology. "Ventricular Receptors and Cardiovascular Control."
18. June 12, 1985. University of Washington, Department of Physiology. "Interaction Between Ventricular Receptors and Baroreflexes in Conscious Dogs."
19. January 13, 1986. Northeastern Ohio Universities College of Medicine. "Ventricular Receptor Control of the Circulation."
20. February 28, 1986. Council on Circulation Symposium, Keystone, Colorado. "Cardiac and Arterial Baroreceptor function in Heart Failure."
21. October 20, 1986. Eastern Virginia Medical School. "Modulation of the Arterial Baroreflex by Cardiac Receptors in Conscious Dogs."
22. October 22, 1986. East Carolina University College of Medicine. "Modulation of the Arterial Baroreflex by Cardiac Receptors in Conscious Dogs."
23. July 7, 1987. Hebei Medical College, People's Republic of China. "Atrial Receptors in Heart Failure."
24. July 8, 1987. Hebei Medical College, People's Republic of China. "Left Ventricular Reflexes and Regional Blood Flow in Conscious Dogs."
25. July 9, 1987. Hebei Medical College, People's Republic of China. "Interaction of the Cardiac and Arterial Baroreflexes on Heart Rate and Peripheral Resistance in Conscious Dogs."
26. July 10, 1987. Hebei Medical College, People's Republic of China. "The Role of Prostaglandins in Baroreflex Control." "Resetting of the Carotid Baroreflex in the Conscious Dog."
27. July 10, 1987. Hebei Medical College, People's Republic of China. "Baroreceptors in heart failure."
28. July 16, 1987. Second Military Medical College, Shanghai, People's Republic of China. "Atrial Receptors in heart failure."

29. July 20, 1987. Department of Physiology. Pramongkutklao College of Medicine, Bangkok, Thailand. "Baroreceptor and atrial receptor reflexes in heart failure."
30. July 20, 1987. Department of Anatomy. Mahidol University, Bangkok, Thailand. "The role of prostaglandins in baroreflex control."
31. October 19, 1987. Tulane University Medical School, New Orleans, Louisiana. "Interaction between ventricular and baroreflexes in conscious dogs."
32. June 3, 1988. Tubingen, West Germany. "Neural Mechanisms of Salt and Water Homeo-stasis in the Primate."
33. June 3, 1988. Tubingen, West Germany. "Cardiac and Baroreflexes in Heart Failure."
34. June 21, 1988. Bristol-Myers Company. "Reflex Control of the Circulation in Heart Failure."
35. June 17, 1988. Department of Physiology, New York Medical College. "Prostaglandins and Baroreflexes."
36. April 3, 1989. Department of Physiology, The University of Louisville. "Prostaglandin Modulation of Arterial Baroreflexes."
37. April 10, 1989. Department of Medicine, Division of Cardiology. University of Toronto. "Ventricular Receptor Control of the Circulation."
38. April 10, 1989. Department of Medicine, Division of Cardiology. University of Toronto. "Reflex Control of the Circulation in Heart Failure."
39. May 23, 1989. Jerusalem, Israel. "Significance of Cardiac and Baroreflexes in Heart Failure."
40. November 13, 1989. Postgraduate Seminar. American Heart Association Scientific Sessions, New Orleans, La. "Prostaglandins and ventricular modulation of baroreceptor reflexes."
41. April, 19, 1990. Nebraska Heart Association. Research Colloquium "Prostaglandin control of cardiovascular reflexes."
42. September 27, 1990. Food and Drug Administration. Bethesda, Maryland. "Baroreflex control of the circulation in heart failure"
43. October 12, 1990. Symposium on Current Topics in Heart Failure. Freudenstadt, Germany. "Modulation of baroreflex and baroreceptor function in experimental heart failure."

44. November 3, 1990. Symposium on Neural Control of the Circulation. "Baroreflexes in heart failure." Joint meeting of American and Chinese Physiological Societies.
45. November 5, 1990. "Baroreflex control of the circulation in heart failure". Department of Medical Research. Taichung Veterans General Hospital. Taichung, Taiwan. ROC.
46. January 11, 1991. Seminar, Dept. of Cardiology. University of California-Davis, Davis, California. "Baroreflex Control of the Circulation in Heart Failure".
47. January 14, 1991. Seminar, Syntex Research. Palo Alto, California. "Prostaglandin modulation of the arterial baroreflex".
48. February 25, 1991. Seminar, Department of Anesthesiology, Medical College of Wisconsin. Milwaukee, Wisconsin. "Baroreflex control in experimental heart failure"
49. February 26, 1991. Seminar, Department of Anesthesiology. Medical College of Wisconsin and VA Medical Center, Milwaukee, Wisconsin. "The role of prostaglandins in modulation of baroreflex function".
50. March 21-22, 1991. Visiting Scientist and Seminar, Department of Medical Physiology, Texas A&M University, College Station, Texas. "Baroreflex control of the circulation in chronic heart failure."
51. April 05, 1991. Seminar, Department of Basic Medical Sciences. Creighton University School of Medicine, Omaha, Nebraska. "Baroreflex control of the circulation in heart failure."
52. April 15, 1991. Seminar, Department of Physiology and Physiology, University of South Dakota School of Medicine, Vermillion, South Dakota. "Baroreflex control of the circulation in experimental heart failure."
53. April 23, 1991. Symposium, FASEB - Factors Affecting the Regulation of the Arterial Baroreflex. "Modulation of arterial baroreflexes in experimental heart failure."
54. April 25, 1991. Symposium, FASEB-The Heart and Control of Renal Excretion: Neural and Endocrine Mechanisms. "Cardiac volume receptors": electrophysiology in normal and pathological states."
55. May 7, 1991. Seminar, Department of Medical Research, Taichung Veterans General Hospital. Taichung, Taiwan. "Modulation of arterial baroreflex control of the circulation by prostaglandins."
56. May 8, 1991. Seminar, Department of Physiology and Biophysics, National Cheng Kung University Medical College, Tainan, Taiwan. "Atrial receptor control of renal function."

57. May 11, 1991. Seminar, Department of Physiology and Biophysics, National Defense Medical Center, Taipei, Taiwan. "Arterial baroreflex control of the circulation in heart failure."
58. June 10, 1991. Seminar, Department of Physiology, New York Medical College, Valhalla, New York. "Baroreflex control of the circulation in heart failure."
59. August 19, 1991. Seminar, Division of Cardiology, Tucson VA Hospital, Tucson, Arizona. "Abnormal baroreflex control of the circulation in experimental heart failure."
60. November 16, 1992. Symposium, Hormones and Early Heart Failure. "Role of cardiovascular reflexes". American Heart Association Scientific Sessions, New Orleans, Louisiana.
61. January 19, 1993. Seminar, Department of Physiology, University of South Florida. "Reflex control of the circulation in chronic heart failure."
62. April 16, 1993. Seminar, Omaha VA Medical Center. "Reflex control of the circulation in experimental heart failure."
63. April 30, 1993. Seminar, Pennsylvania State University, Hershey Medical Center. Department of Internal Medicine, Division of Cardiology. "Reflex control of the circulation in experimental heart failure."
64. May 18, 1993. "Cardiopulmonary reflexes in experimental congestive heart failure". Second International Symposium on Heart Failure-Mechanisms and Management. Geneva, Switzerland.
65. May 21, 1993. Seminar, Eberhard-Karls Universität Tübingen. Physiologisches Institut II. Tübingen, Germany. "Cardiac and baroreflex control of the circulation in heart failure."
66. May 28, 1993. Seminar. Universität Heidelberg. Heidelberg, Germany. Department of Physiology. "Reflex control of the circulation in heart failure."
67. July 01, 1993. Seminar. Division of Cardiology, University of Colorado College of Medicine. "Reflex Control of the Circulation in Heart Failure."
68. August 06, 1993. "Reflex Changes in Heart Failure: Evidence from Animals." Symposium at the International Union of Physiological Sciences, Glasgow, Scotland.
69. April 09, 1994. "Reflex control of the circulation in heart failure." Coleridge Symposium, Sacramento, California.

70. Sept. 27, 1994. Seminar "Baroreceptor and cardiac receptor abnormalities in heart failure." Dept. of Pulmonary and Critical Care Medicine, University of Illinois at Chicago.
71. October 10, 1994. Seminar "Arterial and Cardiopulmonary Reflex Control of the Circulation in Heart Failure". Dept. of Anatomy and Physiology, Kansas State University School of Veterinary Medicine.
72. February 07, 1995. Seminar "Reflex Control of Sympathetic Nerve Activity in Heart Failure: New Concepts". Division of Cardiology. Albert Einstein College of Medicine of Yeshiva University.
73. February 07, 1995. Cardiology Grand Rounds. "Reflex Control of Sympathetic Nerve Activity in Heart Failure: New Concepts". Division of Cardiovascular Physiology, Columbia University College of Physicians and Surgeons.
74. April 12, 1995. FASEB Symposium. "Neural control of the circulation in heart failure and coronary ischemia". Atlanta, Georgia.
75. May 22, 1995. Scientific Conference on the Pathophysiology of Tachycardia-induced heart failure. "Alterations in baroreceptor systems in pacing-induced heart failure". Perdido Beach, Alabama.
76. August 29, 1995. The 3<sup>rd</sup> International Head-Out Water Immersion Symposium. "Enhanced responsiveness of cardiac vagal chemosensitive endings in heart failure". Copenhagen, Denmark.
77. March 28, 1996. Neurohumoral Control of the Circulation in Heart Failure, Medtronic Symposium. "The role of arterial baroreflex stimulation in heart failure". Orlando, Florida.
78. April 30, 1996. "Novel mechanisms for the control of sympathetic nerve activity in chronic heart failure". Mount Sinai Medical Center, New York, N.Y.
79. May 1, 1996. "Novel mechanisms for the control of sympathetic nerve activity in chronic heart failure". Department of Physiology, New York Medical College, Valhalla, New York.
80. May 27, 1996. "Neurohumoral mechanism of autonomic control in experimental heart failure." Symposium Presentation. 4<sup>th</sup> World Congress on Heart Failure. Jerusalem, Israel.
81. October 2, 1996. "Novel mechanisms for the control of sympathetic nerve activity in chronic heart failure". Division of Cardiology, Case-Western Reserve University, Cleveland, Ohio.

82. March 26, 1997. "Multiple mechanisms for the control of sympathetic nerve activity in heart failure: Roles for angiotensin II, nitric oxide and endothelin." Merck Research Laboratories, West Point, Pa.
83. April 28, 1997. "Multiple mechanisms for the control of sympathetic nerve activity in heart failure: Roles for angiotensin II, nitric oxide and endothelin" Division of Cardiology. Pennsylvania State University. Hershey, PA.
84. May 20, 1997. "Multiple mechanisms for the control of sympathetic nerve activity in heart failure: Roles for angiotensin II, nitric oxide and endothelin". Merck-Darmstadt, Germany
85. May 25, 1997. "Central nervous system regulation of autonomic control in experimental heart failure." Symposium on The Brain in Heart Failure: Heart Failure '97, Cologne, Germany
86. May 26, 1997. "Quantification of the sympathetic activation in heart failure". Symposium on Baroreceptor Dysfunction, Reflex Sympathetic and Vagal Control: Heart Failure '97, Cologne, Germany
87. June 14, 1997. "Novel mechanisms of sympathetic activation in heart failure". Symposium on New Frontiers in Cardiovascular Medicine. Taichung, Taiwan
88. June 18, 1997. "Multiple mechanisms for the control of sympathetic nerve activity in heart failure: Roles for angiotensin II, nitric oxide and endothelin" Division of Cardiology. Kyushu University. Fukuoka, Japan.
89. June 19, 1997. "Novel mechanisms of sympathetic activation in heart failure" Kagawa University, Department of Physiology. Takamatsu, Japan
90. June 24, 1997. "Novel mechanisms of sympathetic activation in heart failure" Hebei Medical College. Department of Physiology. Shijiazhuang, China.
91. June 26, 1997. "Novel mechanisms of sympathetic activation in heart failure" Chengde University. Chengde, China
92. July 25, 1997. "Multiple Mechanisms for the Regulation of Sympathetic Outflow in Chronic Experimental Heart Failure". Symposium on Ventricular Rate Related Failure at the International Society for Heart Research, North American Section. Vancouver, British Columbia, Canada.
93. March 16, 1998. "Sympathetic Outflow in Heart Failure: Reflexes, AII, NO and Exercise". Department of Physiology, New York Medical College, Valhalla, NY.

94. September 14, 1998. "Mechanisms of Increased Sympathetic Drive" In "Reflex Control Mechanisms" symposium at the Second Annual Scientific Meeting of the Heart Failure Society of America, Boca Raton, FL.
95. June 4, 1999. "Chemoreflex Regulation of Sympathetic Nerve Activity in Heart Failure." Imperial College , Division of Cardiology, Royal Brompton Hospital, London, UK.
96. June 6, 1999. "The Brain in Heart Failure". Heart Failure '99. Gothenberg, Sweden
97. June 23, 1999. "The Regulation of Sympathetic Nerve Activity in Heart Failure: The Roles of Angiotensin II and Nitric Oxide." Department of Physiology and Biophysics, Georgetown University Medical Center, Washington, D.C.
98. Sept. 23, 1999. "How to measure sympathetic nerve activity". Heart Failure Society of America Meeting, San Francisco, Ca.
99. Sept. 24, 1999. "The Role of Nitric Oxide in Regulating Sympathetic Activity" Heart Failure Society of America Scientific Meeting, San Francisco, Ca.
100. October 5, 1999. "The Regulation of Sympathetic Nerve Activity in Heart Failure: The Roles of Angiotensin II and Nitric Oxide." Hong Kong Pharmacology Society. Hong Kong, China
101. October 8, 1999. "The Role of Exercise Training on Sympathetic Nerve Activity in Heart Failure" The Japanese Heart Failure Society. Fukuoka, Japan
102. October 12, 1999. "The Regulation of Sympathetic Nerve Activity in Heart Failure: The Roles of Angiotensin II and Nitric Oxide." Keio University. Tokyo, Japan
103. January 27, 2000. "Modulation of Neurohumoral Outflow in Heart Failure" University of Missouri at Kansas City-St. Luke's Hospital Grand Rounds, Kansas City, MO
104. April 26, 2000. "The Regulation of Sympathetic Nerve Activity in Heart Failure: The Roles of Angiotensin II and Nitric Oxide." Cardiology Grand Rounds. Henry Ford Hospital. Detroit, MI
105. July 11, 2000. "Endothelin-1 Modulation of Sympathetic Nerve Activity in Heart Failure". 7<sup>th</sup> World Congress on Heart Failure-Mechanisms and Management. Vancouver, B.C., Canada
106. July 20, 2000. "Alterations in the Cardiac Sympathetic Afferent Reflex in dogs with Heart Failure: The Role of Angiotensin II." International Society for Autonomic Neuroscience. 2<sup>nd</sup> International Congress. London, UK.

107. August 24, 2000. "Autonomic Reflex Control of Sympathetic Nerve Activity in Heart Failure, Involvement of Angiotensin II and Nitric Oxide." APS Symposium on Baroreflexes. Iowa City, IA
108. April 21, 2001. "Reflex Control of the Sympathetic Nervous System in Heart Failure". The Iowa Physiological Society, Des Moines, IA.
109. June 12, 2001. "Sympathetic Regulation in dogs with Pacing-Induced Heart Failure." FDA, Bethesda, Maryland.
110. August 16, 2001. "Mechanisms of sympathetic regulation in heart failure" Baker Institute. Melbourne, Australia
111. August 22, 2001. "Sympathetic Nerve Activity in Heart Failure. The Role of Exercise Training." Central Mechanisms of Cardiovascular Control- Cellular, Molecular and Integrative Aspects. Sydney, Australia.
112. August 25, 2001. "Renal Sympathetic Nerve Activity in Heart Failure" Queenstown, New Zealand.
113. November 1, 2001. "Regulation of Sympathetic Nerve Activity in Heart Failure" George Washington University. Washington, D.C.
114. November 27, 2001. "Assessment of Arterial Baroreflex Function: Methodologies and Implications." Safety Pharmacology Society. Chicago, IL.
115. May1,2002. "The control of sympathetic nerve activity in heart failure: Angiotensin II and nitric oxide." New York Medical College, Valhalla, NY.
116. June 19, 2002. "The regulation of sympathetic nerve activity in heart failure:Roles for Angiotensin II and NO" The Paul Erhlich Lecture. The Charite. Berlin, Germany.
117. June 24, 2002. "The regulation of sympathetic nerve activity in heart failure:Roles for Angiotensin II and NO" The University of Leipzig Cardiac Center. Leipzig, Germany.
118. June 30, 2002. "The regulation of sympathetic nerve activity in heart failure:Roles for Angiotensin II and NO" Invited speaker. 4<sup>th</sup> International Congress of Pathophysiology. Budapest, Hungary.
119. October 9, 2002. "Novel aspects of sympathetic regulation in heart failure" Vascular Biology Research Center. Medical College of Georgia. Augusta, Georgia.
120. December 13, 2002. "The regulation of sympathetic nerve activity in heart failure:Roles for Angiotensin II and NO" Cardiovascular Research Center, University of Iowa. Iowa City, IA.



121. January 13, 2003. "The Cardiac sympathetic afferent reflex: A contributing factor to sympatho-excitation in heart failure." International Conference on Chest Diseases and Allied Sciences, New Dehli, India.
122. January 14, 2003. Plenary Lecture. "The influence of sympathetic outflow in heart failure by nitric oxide and angiotensin II." International Conference on Chest Diseases and Allied Sciences, New Dehli, India.
123. May 16, 2003. "The Regulation of Sympathetic Outflow in Chronic Heart Failure". Symposium on the Sympathetic System in Hypertension and Heart Failure. American Society of Hypertension. New York, NY.
124. June 13, 2003. "The Origin of Sympathetic Nerve Activity in Heart Failure". 6<sup>th</sup> Heart Failure Summit. American College of Cardiology. Toronto, Canada.
125. June 28, 2003. "The Origin of Sympathetic Outflow in Heart Failure: the Role of Angiotensin II and Nitric Oxide." Bristol Symposium 2003. Neurohumoral Control of Cardiovascular Function-From Genes to Physiology. Bristol, UK.
126. July 1, 2003. "The Origin of Sympathetic Nerve Activity in Heart Failure". Department of Physiology. University of Birmingham. Birmingham, UK.
127. September 5, 2003. "Mechanisms mediating the normalization of enhanced autonomic function during exercise training in heart failure". Trends in Exercise Physiology and Cardiac Rehabilitation. Rome, Italy.
128. December 4, 2003. "Exercise training and sympathetic regulation in experimental heart failure.". Inaugural Research Symposium. Windsor University School of Medicine. St. Kitts, West Indies.
129. April 20, 2004. "Defining integrative physiology" Public Affairs Workshop Sustaining Integrative and Organ Systems Sciences: Problems, Opportunities, Solutions. EB04 Washington, DC.
130. May 7, 2004. "The Origins of Sympatho-Excitation in Chronic Heart Failure". Department of Integrative Physiology. North Texas Health Sciences Center. Fort Worth, Texas.
131. August 20, 2004. "Chronic Volume Overload and Renal Sympathetic Activation in Heart Failure" NIH Workshop on the Cardio-Renal Syndrome in Heart Failure. Tysons Corner, VA.
132. September 27, 2004. "Exercise training and sympathetic regulation in heart failure" University of Northern Iowa

133. December 9, 2004. "Central Humoral Regulation of Sympathetic Outflow in Heart Failure". Jaipur, India.

134. February 7, 2005. "The regulation of sympathetic nerve activity in heart failure: roles of Angiotensin, reactive oxidant stress and exercise". Hypertension Center, University of Florida School of Medicine, Gainesville, FL.

135. February 8, 2005. "The Role of Statins in Sympathetic Regulation in Heart Failure". Division of Cardiology. University of Florida School of Medicine, Gainesville, FL.

136. September 21, 2005. "Central Neural Control Mechanisms in Heart Failure". Council for High Blood Pressure Research. Washington, D.C.

**NATIONAL AND INTERNATIONAL MEETINGS PARTICIPATED IN:**

FASEB (Experimental Biology) - 1969-1975, 1977-1984, 1982 (chaired session), 1983; (chaired session), 1984-1998, 1999 (chaired session), 2000-2005.

American Society of Nephrology 1971, 1972, 1974.

International Physiology Congress, Washington, D.C. 1968.

International Physiology Congress, Munich, Germany 1971.

International Physiology Congress, Glasgow, Scotland, 1993.

American Heart Meeting, Dallas, Texas 1974, 1978, 1981, 1982, 1986 (chaired session); 1990 (chaired session), 1994 (chaired session), 1998 (chaired session), 2005.

American Heart Meeting, Miami, Florida 1976, 1977, 1980 (chaired session) 1984.

American Heart Meeting, Anaheim, California, 1983, 1987, 1991 (chaired session), 2001.

American Heart Meeting, Washington, DC, 1985, 1988.

American Heart Meeting, New Orleans, Louisiana. 1989, 1992 (chaired session); 1996 (chaired session), 2000; 2004 (Chaired session).

American Heart Meeting, Atlanta, Georgia. 1993 (chaired session).

American Heart Meeting, Orlando, FL 1997 (chaired session), 2003 (chaired session).

American Heart Meeting, Chicago, IL 2002 (chaired sessions).

Fall Meeting of the American Physiological Society, San Francisco, California. 1975.

Fall Meeting of the American Physiological Society, Philadelphia, Pennsylvania. 1976.

Fall Meeting of the American Physiological Society, Hollywood, Florida. 1977.

Fall Meeting of the American Physiological Society, New Orleans, Louisiana. 1979.

Fall Meeting of the American Physiological Society, San Diego, California. 1982.

Fall Meeting of the American Physiological Society, Honolulu, Hawaii. 1983.

Fall Meeting of the American Physiological Society, Orlando, Florida. 1990.

Circulation Council of American Heart Association, Keystone, Colorado. 1980, 1986.

Circulation Council of American Heart Association, Aspen, Colorado. 1981.

American College of Cardiology, Orlando, FL. 2005

American Heart Association Research Committee, Established Investigator Meeting, Williamsburg, Virginia. 1979.

FASEB Summer Research Conference. Neural Control of the Circulation, Saxtons River, Vermont. June 1984.

American Heart Association Delegate Assembly. Dallas, Texas. June 19-21, 1987.

Cardiac Dilatation Symposium, Tübingen, West Germany. (Chaired session.) June 2-4, 1988.

First International Symposium on Heart Failure - Mechanisms and Management. Jerusalem, Israel. (Chaired session). May 21-25, 1989.

Association of Chairmen of Depts. of Physiology, San Juan, Puerto Rico. November 30 - December 3, 1989.

Association of Chairmen of Depts. of Physiology, Scottsdale, Arizona. December 5-8, 1991.

Association of Chairmen of Depts. of Physiology, Stuart, Florida. Jan 14-17, 1993.

Association of Chairmen of Depts. of Physiology, Palm Springs, California. December 2-5, 1993.

Association of Chairmen of Depts. of Physiology, Cabo San Lucas, Mexico. December 1-4, 1994; December 5-9, 2001

Association of Chairmen of Depts. of Physiology, Cancun, Mexico. December 7-10, 1995

Association of Chairmen of Depts. of Physiology, Captiva Island, Florida. December 5-8, 1996

Association of Chairmen of Depts. of Physiology, San Antonio, Texas. December 4-6, 1998

Association of Chairmen of Depts. of Physiology, Tucson, AZ Nov. 30-Dec. 2, 2000

Association of Chairmen of Depts. of Physiology, Santa Fe, NM. December 5-7, 2002

Association of Chairmen of Depts. of Physiology, St. Kitts, BWI. December 4-7, 2003

Association of Chairmen of Depts. of Physiology, Maui, HI. December 2-5, 2004

Association of Chairmen of Dept. of Physiology, Salt Lake City, UT. October 5-6, 2005

Sarnoff Society of Cardiovascular Fellows, Bethesda, Maryland. May 4-6, 1990; May 1-3, 1992-99.

Sarnoff Society of Cardiovascular Fellows, Washington, D.C. 1996-2001, 2003, 2005

Current Topics in Heart Failure: Experimental and Clinical Aspects, Freudenstadt, Germany. October 11-14, 1990.

AAMC Executive Development Seminar, Marathon, Florida. November 30-December 5, 1990.

Midwest Hypertension Society, Scientific Meeting, Omaha, Nebraska. 1991-93

Second International Symposium on Heart Failure - Mechanisms and Management. Geneva, Switzerland. (Chaired Session), May 16-20, 1993

Society for Neuroscience, Miami Beach, Florida, Nov. 12-16, 1994; October 24-28, 1999.

Experimental Biology '95 Symposium Organizer, "Neural Control of the Circulation in Heart Failure and Coronary Ischemia", Atlanta, Georgia. April 12, 1995

International Society for Heart Research (ISHR), Perdido Beach, Alabama. May 20-25, 1995.

International Society for Heart Research (ISHR), Vancouver, British Columbia, Canada. July 23-28, 1997 (Symposium Chairman).

The 3<sup>rd</sup> International Head-Out Water Immersion Symposium, Copenhagen, Denmark. August 27-30, 1995.

Neuro-humoral Control in Heart Failure, Medtronic, Orlando, Florida. March 27-28, 1996.

Fourth International Symposium on Heart Failure: Mechanisms and Management, Jerusalem, Israel. May 25-29, 1996.

Cardiovascular Seminar Organizer, American Heart Association Scientific Sessions, New Orleans, Louisiana. November 9, 1996.

Heart Failure '97: European Working Group on Heart Failure. Invited Speaker. Cologne, Germany, May 25-May 28, 1997.

Frontiers in Cardiovascular Medicine, June 14, 1997. Taichung, Taiwan.

International Society for Heart Research World Congress. Rhodes, Greece, May 24-29, 1998.

Scientific Meeting of the Heart Failure Society of America. Boca Raton, FL September 13-16, 1998; September 9-14, 2000; September 20-25, 2002; September 16-20, 2005.

Scientific Meeting of the Heart Failure Society of America. San Francisco, Ca. Sept. 21-25, 1999

International Symposium on Angiotensin II Receptor Antagonists. Monte Carlo, Monaco January 27-30, 1999, January 24-27, 2001.

Heart Failure '99. Gothenberg, Sweden. June 5-8, 1999.

Scientific Conference on Molecular, Cellular, and Integrated Physiological Approaches to the Failing Heart. Snowbird Conference Center, Utah August 18-22, 1999.

Seventh International Symposium on Heart Failure: Mechanisms and Management, Vancouver, BC. Canada, July 9-12, 2000.

International Society for Autonomic Neuroscience, Millennium Congress, London, UK, July 17-21, 2000.

International Society for Autonomic Neuroscience, Marseille, France, July 11-16, 2005.

APS Conference on Baroreceptors and Cardiopulmonary Receptors, Iowa City, IA August 24-27, 2000.

Iowa Physiological Society, Des Moines, IA April 20-21, 2001.

American Heart Association Lobby Day, Washington, DC April 23-25, 2001.

Central Mechanisms of Cardiovascular Control: Cellular, Molecular and Integrative Aspects. August 20-22, 2001, Sydney, Australia.

Renal Mechanisms in Health and Disease. August 23-25, 2001. Queenstown, New Zealand.

International Physiology Congress, August 26-31, 2001 Christ Church, New Zealand.

International Physiology Congress, March 30-April 5, 2005, San Diego, CA

Safety Pharmacology Society, September 24, 2001, Chicago, IL

4<sup>th</sup> International Congress of Pathophysiology. June 29-July 5, 2002. Budapest, Hungary.

FASEB Summer Conference on Neural Mechanisms in Cardiovascular Regulation. July 20-July 25, 2002. Snowmass, Colorado.

What is Training in the Pharmacological Sciences. NIGMS. Bethesda, Maryland, August 8-9, 2002

The Evolving Role of the Basic Science Department Chair. AAMC. October 11-13, 2002. Philadelphia, PA

International Congress on Chest and Allied Diseases, January 12-14, 2003, New Delhi, India

American Society of Hypertension, May 14-17, 2002, New York City, NY

Trends in Exercise Physiology and Cardiac Rehabilitation. Rome, Italy, Sept. 5-6, 2003.

AHA Council for High Blood Pressure Research, Oct 8-12, 2004, Chicago, IL

AHA Council for High Blood Pressure Research, Sept. 21-23, 2005, Washington, D.C.

Long Term Control of Blood Pressure, December 7-12, 2004, Jaipur, India

AAMC Basic Science Chairs Meeting, October 7-9, 2005, Salt Lake City, UT.

American Physiological Society Strategic Planning Meeting, October 29-Nov 1, 2005, Houston, TX.

**UNIVERSITY, COLLEGE OF MEDICINE AND DEPARTMENTAL COMMITTEES:**

Seminar Chairman, Physiology and Biophysics, 1973-1974; 1982-1983

Ad Hoc Committee for the formation of a governance document for Graduate Council at the University of Nebraska Medical Center, 1976

Animal Care Committee, 1976-1988

University of Nebraska Medical Center Scholastic Evaluation Committee, 1976-1982

Departmental Research Committee, 1977-1979

University of Nebraska Medical Center Executive Faculty Committee, 1977-1978

University of Nebraska Standing Committee on Continuing Medical Education, 1978

University of Nebraska Medical Center Accreditation Committee, 1978

Departmental Graduate Committee, 1978, 1979-1980 (Chairman), 1981, 1985-1989

University of Nebraska Medical Center Research Advisory Committee, 1980 (Chairman), 1982, 1986, 1987

Faculty Advisor, Graduate Student Association, 1980-1990

University of Nebraska Grant Review Group for Board of Health (Chairman), 1984

University of Nebraska Research and Development Committee, 1984-1989

Animal Research Committee, Chairman, University of Nebraska Medical Center, 1984- 1989

Search Committee for Chairman of Biochemistry, 1985-1986

Pharmacology Department Review Committee, 1987

Student Appeals Committee, June 1990

Pharmacology Chairman Search Committee, 1987-1988

M.D.-Ph.D. Program Committee, 1988

Ad Hoc Committee for Curriculum (Research Thesis), 1989

University of Nebraska College of Medicine Promotions and Continuous Appointments Committee, 1989-1995

Internal Medicine Chairman Search Committee, 1990

Burlington Northern Teacher-Scholar Award Committee, 1991

Chairman, Cardiovascular Coordinating Committee, 1991-1997

Chairman, Promotions and Continuous Appointments Committee, 1991-1995

Search Committee for Chairman of Biochemistry 1993

Outstanding Research and Creative Activity Award Committee 1993-1995

Cardiovascular Strategic Planning Committee 1994- Coleridge Symposium, University of California at Davis. April 8-9, 1994.

Human Resource Strategic Repositioning Process, 1995-1997

Cardiology Evaluation Committee, 1995.

New Graduate Program Planning Committee 1996-1997

Cardiology Chief Search Committee 1997-1998

Lied Transplant Center Space Committee, 1997-1998

Search Committee for Chairman of the Department of Internal Medicine, 1999-2000

Centers of Excellence Building Steering Committee, 1999-2000

Chairman, Animal Facilities Subcommittee, 1999-2000

Curriculum Committee, College of Medicine, 10/2000-09/2003

Research Resources Board, 2004-

Search Committee for Chairman of the Department of Internal Medicine, 2004

Comparative Medicine Advisory Committee, 2004-



**TEACHING:**

Renal and Acid-Base Physiology questions for the University of Louisville Health Sciences Center Computer Program. Copyright, 1976

Taught renal and cardiovascular (reflex control) physiology to medical students at the University of Nebraska Medical Center, 1972, 1974, 1977-1992

Taught renal physiology to medical students at Creighton University, 1977, 1978, 1981

Taught renal physiology to physician's assistant students, pharmacy and physical therapy students, 1979, 1980, 1982-1989, 1993

Organized and taught graduate courses in comparative (1975), renal (1976-1983, 1987, 1990, 1992, 1996) and cardiovascular physiology (1977, 1980-1982, 1985, 1997, 2000) at the University of Nebraska Medical Center

Taught Renal Pathophysiology for nurses, 1984

Nursing Physiology - Renal lectures, 1989-1991, 1993, 1995, 1996, 1998-2000

Renal Subcommittee Chairman (Core 4) 1992

Nurse Anesthetist Review Seminar - Renal Physiology, 1976

Critical Care Nurses Review - Renal Physiology, 1978

Midwest Student Research Forum - Research Seminar, 1979

Course Coordinator - Physiology for physician's assistants, pharmacy students and physical therapists, 1980-1981; 1982-1985, Continuing Education for nurses, renal patho-physiology, Methodist Hospital, 1984

Continuing Education for nurses, cardiovascular pathophysiology, Methodist Hospital, 1984

Anatomy and Physiology - University of Nebraska at Omaha, 1986

Endocrine and Cellular Regulation Biochemistry, 1987

Judge - Midwest Student Research Forum, 1988-1989, 1996, 1998, 1999-2002

Advanced Cardiopulmonary Physiology, Co-Director, 2005

**Graduate Student Research Committees:**

J. Strand	L. Stacy	L. Huffman	A. Ryberg	G. Bush
M. Hajdu	P. Lacy	K. Rovang	R. Mohama	P. Keelan
M. Holmberg	M. Davis	P. Nwangnu	W. Mayhan	J. Dietz
R. Click		S. Echtenkamp	M. Al-Turk	N. Wahab

T. Clanton	C. Cherdchu	T. Yong	M. Hicken
(MS) K. Zhang	S. Didion	R. Ma	R. Bernstein
Carolyn Barrett (Un. of Otago)	K. Estep	Yi-Ming Zhang	C. Chaperon
Cristabel Stokes (Un. of Bristol)	K. Devalaraja-Narashimha		

**Graduate Students Supervised:**

John R. Dietz (1976-1979)

Present Position: Professor, Department of Physiology, University of South Florida, Tampa, Florida

Mark J. Holmberg (1980-1983)

Present Position: Cardiologist, Private Practice Omaha, Ne.

Michael A. Hajdu (1984-1988)

Present Position: Medical Resident, University of Vermont

Wen Tan (1984-1989)

Present Position: Center for advanced medicine and drug development. Beijing, China

Joseph McClain (1989-1990)

Present Position: Surgical Fellow, San Antonio, Texas

Kay Rhyschon (1992-1993)

Present Position:

Jun-Li Liu (1995-1999)

Present Position: New York Hospital, Cornell University. Clinical Perfusionist.

Yu Wang (2000-2004)

Present Position: Resident, Family Practice. Creighton University, Omaha, NE

**Post-Doctoral Fellows:**

Andrew J. Gorman, Ph.D. 1980-1982

Present Position, Research Scientist, Hoechst-Celanese Corp. Summerville, New Jersey

Mark J. Niebauer, M.D., Ph.D. 1983-1984.

Present Position, Associate Professor, Division of Cardiology. University of Nebraska Medical Center, Omaha, NE

Maret J. Panzenbeck, Ph.D. 1985-1988.

Present Position, Research Scientist, Beringer-Ingelheim, Connecticut

Wen Tan, M.D. , Ph.D. 1984.

Present Position: Center for advanced medicine and drug development. Beijing, China

Wei Wang, M.D., Ph.D. 1988-1990.

Finalist, Melvin Marcus Young Investigator Award.

Present Position: Associate Professor, Department of Physiology, University Nebraska College of Medicine, Omaha, Nebraska

Jwo-Sheng Chen, Ph.D. 1988-1990.

Present Position: Chairman, Dept. of Physiology China Medical College, Taichung, Taiwan

Marian Brändle, Ph.D. 1990-1992.

Finalist, Melvin Marcus Young Investigator Award.

Present Position: Merck and Co. Darmstadt, Germany

Jun-Li Liu, Ph.D. 1994 .

Present Position: Clinical Perfusionist, Cornell University, New York Hospital, NY, NY

Hiroshi Murakami, M.D., Ph.D. 1994-1996 .

Present Position: Surgeon, Kagawa Medical School, Kagawa, Japan.

Shu-Yu Sun, M.D., Ph.D. 1996-1998

Present Position: Merck and Company

Kiyoshi Tsunooka, M.D., Ph.D. 1998-2000

Medical Resident, University of Nagoya, Japan

Rainer Pliquett, M.D. 1999-2001

Present Position, Medical Resident. University of Leipzig. Leipzig, Germany

Guo-Qing Zhu, M.D., Ph.D. 1999-2002

Present Position, Professor, Nanjing Medical University, China

Dongmei Liu, M.D., Ph.D. 2000-

Lei Gao, M.D., Ph.D. 2002-

Tarek Mousa, M.D. 2003-

### **Medical Student Fellows:**

Brian Miller (1980) (became Sarnoff Cardiovascular Research Fellow)

Michael Lang (1983)

Sue Kess (1983)

Diana Antoniskis (1982)

Michael Wadzinski (1985) (became Sarnoff Cardiovascular Research Fellow)

James F. Luebbert (1984)

Shelly Barker (1986)

Stephanie Kramer (1982)

Marc Weitzel (1989)

Tom Clinch (1992)

Saswatha Roy (1994)

Patrick McConnell (1994-96, First Prize Midwest Student Research Forum,  
2/96, Sarnoff Fellow, 1996-97)

Scott Swanson (1998), Sarnoff Fellow, 1999-2000

Jason Chu, 1999

Brad Hiser- 2001,2002,2003

Mathue Baker, 2001 (Sarnoff  
Fellow, 2002)

Ron Rawlings-2002

Patricia Sund, 2003

### **Other Student Fellows:**

Matthew Rings 1983

Lynn Polonski 1985

Tom Bartholet 1989-1990

Matt West 1993

Brenda Hilkemann 1993

Eric Givner 1995

Beth Higa, 1995-1996

George Dittrick 1997

Jay Kulakofsy 1997,1998,2000

Erin Brewer 1999

Chad Hindman 2000

Anna Lillidahl 2003

Ram Chettiar 2003-04

Nick Anderson 2004-05

Marcus Finch 2005

### **American Physiological Society Summer Teaching Fellow**

Steve Stultz, 1996

## PROFESSIONAL ASSOCIATIONS:

- 1967-1971 New York Academy of Science
- 1973-1975 Associate Member, American Physiological Society
- 1973- Member, American Heart Association
- 1975- Full Member, American Physiological Society
- 1978- Fellow, Circulation Group, American Physiological Society
- 1979- Member, Council on Circulation, American Heart Association
- 1979- Member, Council on Basic Science, American Heart Association
- 1979- Member, Society for Experimental Biology and Medicine
- 1979- Member, Neural Control of the Circulation Group
- 1980- Fellow, Council on Circulation, American Heart Association
- 1982- Sigma Xi
- 1982- Member, American Physiological Society, Section on Water and Electrolyte Homeostasis
- 1985-88 Animal Care and Experimentation committee of the American Physiological Society
- 1990 National Institutes of Health Experimental Cardiovascular Sciences Study Section - Ad Hoc
- 1989- Sarnoff Society of Cardiovascular Fellows
- 1992- Scientific Advisory Board, International Society for Heart Failure, Inc.
- 1993- Fellow, Council for High Blood Pressure Research, American Heart Association
- 1994 National Institutes of Health Experimental Cardiovascular Sciences Study Section - Ad Hoc
- 1994 National Institutes of Health Lung Biology and Pathology Study Section - Ad Hoc
- 1994- Society for Neuroscience
- 1995- Member, Fellowship Committee of CV Section of American Physiological Society
- 1996- Member, Heart Failure Society of America
- 1998-02 Councilor, Society for Experimental Biology and Medicine Chairman, Nominating Committee
- 1998-03 Member, Publications Committee, Heart Failure Society of America
- 2000- Member, Clinical Physiology Committee, International Union of Physiological Sciences.
- 2000- Member, Executive Committee, Council on Basic Cardiovascular Sciences,
- 2000 AHA.Member, Melvin Marcus Young Investigator Committee, AHA
- 2001-02 Public Affairs Committee, American Physiological Society
- 2001- Councilor, Association of Chairs of Physiology
- 2002-03 President, Association of Chairs of Physiology
- 2002-03 Member, Cardiovascular and Renal (CVB) study section, NHLBI.
- 2004-07 Member, Clinical and Integrated Sciences Study Section, NHLBI.
- 2000 Member Public Affairs Committee, APS
- 2004 Chairman, Public Affairs Committee, APS
- 2003-04 Member Research Committee, AHA
- 2004-07 Councilor, American Physiological Society

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